



S.F.V.B.S.

SAN FERNANDO VALLEY BROMELIAD SOCIETY

FEBRUARY 2017

P.O. BOX 16561, ENCINO, CA 91416-6561

sfvbromeliad.homestead.com

sanfernandovalleybs@groups.facebook.com

Elected OFFICERS & Volunteers

Pres: **Bryan Chan and Carole Scott** V.P.: **John Martinez** Secretary: **Leni Koska** Treasurer: **Mary Chan** Membership: **Joyce Schumann** Advisors/Directors: **Steve Ball, Bryan Chan, Richard Kaz –fp, Mike Wisnev** Sunshine Chair: **Georgia Roiz**,
Web: **Mike Wisnev**, Editors: **Mike Wisnev & Mary K.**, Snail Mail: **Nancy P-Hapke**

next meeting: Saturday Feb. 4, 2017 @ 10:00 am

Sepulveda Garden Center 16633 Magnolia Blvd. Encino, California 91316

AGENDA

9:30 – SET UP & SOCIALIZE

10:00 - Door Prize – one member who arrives before 10:00 gets a Bromeliad

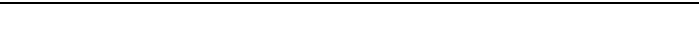
10:05 -Welcome Visitors and New Members. Make announcements and Introduce Speaker

10:15 –Speaker Tom Glavich

Program: “The High Drakensberg in Summer” Tom Glavich is a long time grower of bulbs and succulent plants including some bromeliads. He is a member of the Board of Directors of the Cactus and Succulent Society of America and author of the Beginner's Guide series of articles that appear in the CSSA Journal. He tries to spend as much time outdoors as possible and takes field trips whenever he can.

Tom will present a talk on The High Drakensberg in Summer. Although there are no Bromeliads in the Drakensbergs, they are home to some of the most amazing endemic plant species in the world. The Drakensberg Mountains are the border between South Africa and the Mountain Kingdom of Lesotho. We will explore some of the unique flora and scenery of this fascinating part of the world.

Don't miss this meeting! <>



11:15 - Refreshment Break and Show and Tell:

Will the following members please provide refreshments this month: *Stacey Phelps, Chris Rogers, Georgia Roiz, Joyce Schumann & Rosemary Polito, Carole Scott, Jane Shultz, Raquel Smith, Peter Speciale, Scott Spreckman, Vuthya Suor*

and anyone else who has a snack they would like to share. If you can't contribute this month don't stay away.... just bring a snack next time you come.

Questions about refreshments? Call Mary K. (818-705-4728) Leave message - she will call back.

Feed The Kitty

If you don't contribute to the refreshment table, please make a small donation to ([feed the kitty jar](#)) on the table; this helps fund the coffee breaks.

11:30 - Show and Tell is our educational part of the meeting – Members are encouraged to please **bring one or more plants**. You may not have a pristine plant but you certainly have one that needs a name or is sick and you have a question.

11:45 – Mini Auction: members can donate plants for auction, or can get 75% of proceeds, with the remainder to the Club

12:00 – Raffle: Please bring plants to donate and/or buy tickets. Almost everyone comes home with new treasures!

12:15 - Pick Up around your area

12:30 –/ Meeting is over—Drive safely <>

Taking a look back at last month...

Announcements

We have two new co-Presidents, Carole Scott and Bryan Chan. Congratulations to both

Participation Rewards System

– This is a reminder that you will be rewarded for participation. Bring a Show-N- Tell plant, raffle plants, and Refreshments and you will be rewarded with a Raffle ticket for each category. We realize not everyone has pristine show plants but each of us certainly have unidentified plants that can be brought in. Each member, please bring one plant

Please pay your 2017 Membership Dues

NEED TO RENEW ?.....

Pay at the meeting to: Membership Chair – Joyce Schumann or Treasurer - Mary Chan or Mail to: SFVBS membership, P.O. Box 16561 - Encino, CA 91416-6561

Yearly Membership Dues \$10.00 for a single or couple

Please Put These Dates on Your Calendar

Here is our 2016 Calendar. As our schedule is always subject to change due to, please review our website and email notices before making your plans for these dates.

Saturday Feb 4, 2017	Speaker – <i>Tom Glavich</i>
Saturday March 4	STBA
Saturday April 1	STBA
Saturday May 6	
Saturday June 3	
Sat & Sun - June 10&11,	SFVBS Bromeliad Show & Sale
Saturday July 1	
Saturday August 5	
Saturday September 2	
Saturday October 7	
Saturday November 4	
Saturday December 2	Holiday Party

STBA = Speaker To Be Announced

Speakers Let us know if you have any ideas for Speakers about Bromeliads or any similar topics? We are always looking for an interesting speaker. If you hear of someone, please notify John Martinez johnwm6425@gmail.com <>

Member Photos

In October, 2016, BSI finally published the missing back issues of BSI Journal Volume 63 (2013). The cover is *Puya coerulea* at the HBG, from an article titled “Some rarely seen *Puya* at the Huntington Botanical Gardens” by Mike Wisnev.

JOURNAL

OF THE BROMELIAD SOCIETY

VOLUME 63(3-6): 145-240.



MAY - DECEMBER 2013



Tillandsioideae Revisions – Part 3

By Mike Wisnev (mwisnev@gmail.com)

San Fernando Valley Bromeliad Society Newsletter –February 2017

The last few months discussed most of the new Tillandsioideae revisions based on DNA testing. In a very lengthy article, the genera *Tillandsia* and *Vriesea* have been revised significantly. Barfuss, M.H.J.; Till, W.; Leme, E.J.C.; Pinzón, J.P.; Manzanares, J.M.; Halbritter, H.; Samuel, R. & Brown, G.K. (2016) *Taxonomic revision of Bromeliaceae subfam. Tillandsioideae based on a multi-locus DNA sequence phylogeny and morphology. Phytotaxa* 279 (1): 001–097. From here on, this will be called the 2016 Study.

So far, we discussed all of the tribes: the non-core Tillandsioideae (*Catopsis* and *Glomeropitcairnia*), and the tribes Vrieseae and Tillandsieae. This month discusses the details of the genus *Tillandsia*.

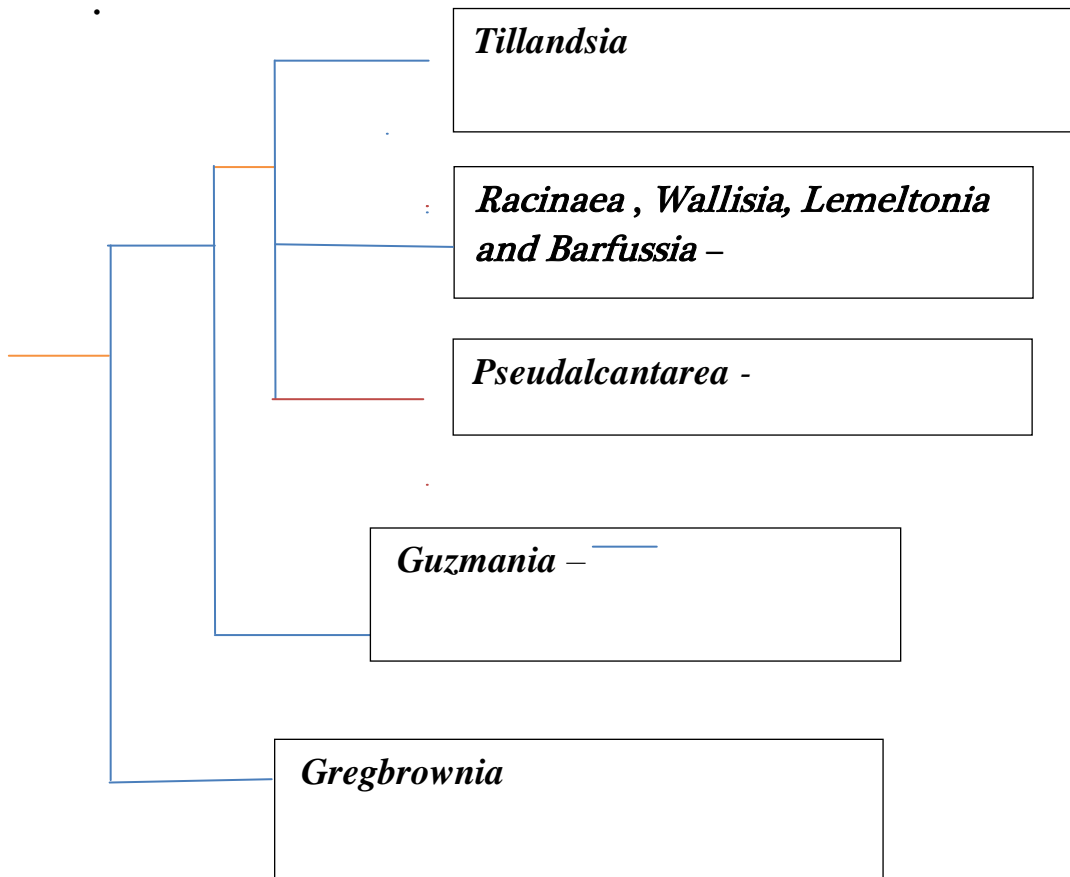
This genus remains the largest bromeliad genus, and is one of three lineages in the core Tillandsieae group of the Tillandsieae tribe. The *Tillandsia* genus is smaller than before due to the transfer to the above genera, as well as the transfer of some species to the Vriesinae tribe., but now includes some former *Vriesea* species

A bit of history. *Tillandsia* has more species than any other bromeliad genus – even after many were moved to other genera in the 2016 Study, there are about 650 species. Taxonomists have made some efforts to break these down into smaller subgenera and complexes. A series of articles in late 2013 in this Newsletter discussed them.

The January 2014 Newsletter finished the series and stated “there are currently six subgenera of the *Tillandsia* genus. Two subgenera are distinguished by their exserted stamens; the larger of these groups typically has tube-like flowers, while the other has droopy petals. Two others have very short stamens (and short and stout styles). So we have seen two subgenera with long exserted stamens, and two with very short ones... That only leaves flowers with mid-size stamens. In fact, the subgenus *Allardtia* has stamens that are almost as long as the petal, or slightly shorter. Styles are slender... *Tillandsia* in the *Anoplophytum* subgenus have stamens that generally don’t extend

beyond the petal claw (remember that is the bottom narrow part of the petal), so they are relatively shorter than those in the *Allardtia* subgenus. “

Below is an overview of the Tillandsieae tribe



Three of the co-authors of the 2016 Study conducted *Tillandsia* DNA studies and published an article back in 2005. Barfuss, M.H.J., Samuel, R., Till, W., Stuessy, T.F., 2005. Phylogenetic relationships in subfamily Tillandsioideae (Bromeliaceae) based on DNA sequence data from seven plastid regions. *Am. J. Bot.* 92, 337–351. The 2005 revealed these six might not be valid, but the authors felt more intensive study was needed.

The January 2104 Newsletter concluded as follows. “For the subgenera to be valid from a DNA standpoint, the tree would have six major branches, and each branch would include one subgenus. Instead, the results found major three branches for *Tillandsia*, each of

which branched a lot more. None of the subgenera fell on a single branch. The closest was subgenus *Tillandsia*.”

The 2016 study did not completely address the taxonomic status of the *Tillandsia* genus. After dealing with the other genera it stated:

“Remaining species of *Tillandsia* are grouped into 14 mostly well-supported clades (subgenera and species complexes) with two unclassified species (*T. albertiana*, *T. esseriana*). These clades are generally not treated taxonomically in the current study and are the subject of a separate publication with an expanded sampling and additional DNA loci The exceptions are two new subgenera, because these species complexes were treated within another (*Vriesea*) or as a separate genus (*Viridantha*). The inclusion of xeromorphic *Vriesea* species into *Tillandsia* as proposed by Grant ... is confirmed while the segregation of *Viridantha* ... will only be corroborated if further splitting of *Tillandsia* is undertaken. We therefore propose the status of subgenera (without necessary generic transfers) for both entities (T. subg. *Pseudovriesea*, T. subg. *Viridantha*) and the emendation of T. subg. *Viridantha* s.l. also to include the *T. tectorum* complex ...” 2016 Study at 34.

Because the 2016 Study included some new species and also tested different DNA loci, the 2005 and 2016 cladograms did not match precisely, though they were fairly similar. The only subgenus to remain unscathed appears to be *Diaphoranthema*. Three others remain in existence, but are reconstituted or significantly smaller. One is now a small genus. *Allardtia* is no longer recognized. Here is how the subgenera and other groups played out in the two studies.

Subgenus and traditional characteristics	2005 Study	2016 Study
<i>Tillandsia</i> -exserted stamens	Most likely to be a good subgenus – most grouped together on one branch, but some exceptions and type plant of <i>Allardtia</i> also on that branch	A good subgenus, but reconstituted. Some former members moved to other groups such as <i>biflora</i> and <i>rauhii</i> complexes. Now includes some former <i>Allardtia</i> members , one former <i>Pseudalcantarea</i> member and

		some former <i>Vriesea</i> .
<i>Pseudalcantarea</i> - exerted stamens and flaccid petals	Only 3 sp studied, and 2 on different branches. <i>T. viridiflora</i> by itself on 4 th branch.	<i>T. viridiflora</i> and 2 new others now in a new smaller <i>Pseudalcantarea</i> genus. Others distributed elsewhere.
<i>Phytarrhiza</i> - Short stamens and large flowers	On two major branches, and not grouped together on either branch.	A good subgenus, but massively smaller – 11 xeric species. The mesic and semi-xeromorphic members generally are now in <i>Racinaea</i> and other new genera, like the <i>Wallisia</i> , <i>Lemeltonia</i> and <i>Barfussia</i> seem to consist solely of former members of this subgenus. Other xeric former members are distributed in other groups..
<i>Diaphoranthema</i> – short stamens and small flowers	Only a few studied, all on one major branch, but not grouped together	Much better results. Remains a good subgenus with no apparent changes.
<i>Anoplophytum</i> – medium short stamens	All on one major branch, but grouped together on 4 different branches of it; 3 of these correspond to specific geographic regions.	A good subgenus, but much much smaller. Most distributed in other <i>Tillandsia</i> groups, including a new subgenus <i>Aerobia</i> .
xeric <i>Vriesea</i> – Grant had proposed these be moved to <i>Tillandsia</i>	Grouped together on one major branch of <i>Tillandsias</i> .	A new <i>Tillandsia</i> subgenus <i>Pseudovriesea</i> , includes these xeric <i>Vriesea</i> and some <i>Tillandsia</i> ,
Green petalled <i>Tillandsia</i> – Esposa had proposed new genus <i>Viridantha</i> for them		Not a new genus, but fell together and now <i>Tillandsia</i> subgenus <i>Viridantha</i> . Includes <i>T. tectorum</i> complex.
Genus <i>Racinae</i> . Treated as new genus in 1993 from former <i>Tillandsia</i>	Same as 2016 Study.	Remains a valid genus. However, it now includes some former subgenus <i>Phytarrhiza</i> members. Without these new members, <i>Racinae</i> would not

subgenus <i>Pseudocatopsis</i> .		have been a valid genus.
<i>Allardtia</i> – medium long stamens	A mess – some on each major branch, and not even grouped together on the largest such branch. Some with <i>Vriesea</i>	No longer recognized. Some now in tribe Vrieseae (<i>Josemania</i> and the <i>Cip.-Mez. complex</i>), and others distributed in various <i>Tillandsia</i> groups.

Rather than providing a cladogram, set forth below is an outline of the various groups corresponding to the cladogram in the 2016 Study.

- 1) Clade 1 – *T. disticha* complex – 2 sp.
- 2) Clade 2 – **subg. *Pseudovriesea***- 49 sp. From *Vriesea* (*T. cereicola* and *espinosae*) and subg. *Allardtia* (*T. myriantha* and *barthlottii*) and subg *Tillandsia* (*T. spathacea*).
- 3) *Clade 3* – **subg. *Tillandsia***. More than 270 sp. Includes many well known species like *T fasciculata*, *ionantha*, *juncea* and *setacea*, and a variety of species from other groups - *T. paniculata*, 2 former *Vriesea*, various former *Allardtia* (including the type) such as *and. T secunda*, *lieboldiana* and *guatemalensis* .
- 4) Clade 4 - predominantly South America
 - a) Subclade 1 – has 2 clades
 - i) *T. purpurea* complex – 6 sp, including *T cacticola* .
 - ii) **Subg. *Viridantha***, including *T. tectorum* complex. 23 sp.
 - b) Subclade 2 – predominantly Andean species, as follows
 - i) Small clade of following
 - (1) *T. australis* complex – 4 sp.
 - (2) *T. spaerocephala* complex – 6 sp. incl. *T. nana*.
 - ii) Large clade of following
 - (1) *T. rauhii* complex – 3 sp.
 - (2) Another clade with 2 subclades
 - (a) *T. biflora* complex – about 136 sp. incl. *T maculata*, *macbrideana*, *floribunda* and *imperialis*
 - (b) Another group of following
 - (i) *T. gardneri* complex – 17 sp. incl. *T. brachyphylla* and *edithae*
 - (ii) *Clade* as follows

1. *T. albertiana* – unclassified so far
2. Clade as follows
 - a. Clade as follows
 - i. Subg. *Aerobia* – 50 sp. from *Allardtia* and *Anoplophytum* subg. Includes *T. xiphioides*, *didisticha* and *caulescens*. This resurrected subgenus had been recognized by Mez.
 - ii. Subg. *Phytarrhiza* – 11 sp. incl. *T. duratii* and *paleacea*.
 - b. Clade as follows
 - i. *T. esseriana* unclassified so far
 - ii. Subg. *Anoplophytum* – 33 sp. Includes *T. bergeri tenuifolia*, *stricta* and *ixiodes*.
 - iii. Subg. *Diaphoranthema* – 30 sp. Includes *T. usneoides*, *recurvata* and *capillaris*.

As is evident, this is pretty complicated, and is likely to get more so in the future. The various subgenera are distributed in various places and many species remain in various complexes that are not yet assigned to new subgenera. Some of these complexes are larger than existing subgenera which were preserved to maintain their type plant.

One point to note is why some subgenera disappeared and others remained valid even though they are much smaller. Each genus (and subgenus) has a type species identified when the genus was named. Generally, the type plant always remained tied to the genus or subgenus. For example, the type plant of subg. *Phytarrhiza* is *T. duratii*. Even though that subgenus is not monophyletic, the subgenus name stays with the small group containing *T. duratii*, even if many more species of the group are moved elsewhere. In contrast, if the type moves to another subgenus, that subgenus now has two type plants and the name will generally be the earlier one. For example, because the type plant of former subg *Allardtia* now falls in subg *Tillandsia*, subg. *Allardtia* no longer exists.

The article notes that they do not provide the morphological characteristics of the various groups, and that topic will be the subject of a sister paper. Presumably, if they identify salient morphological characters for one or more groups they will be reclassified into new subgenera.

The highly branched tree of *Tillandsia* will no doubt present some challenges as the authors attempt to find morphological characters corresponding to the branches. For

example, there is one clade of 4 *T australis* complex species and 6 *T sphaerocephala* complex species. Will they be combined into a single group, or remain separated? This will probably depend upon the extent to which they have differing morphologies.

There may also be many more small subgenera, or unclassified species. Consider the three species of the *T. rauhii* complex. Based on the tree above, it either will (1) remain a separate group, or (2) be combined with the enormous clade (which already has 4 subgenera and one big complex) into a super subgenus.

Many thanks to Prof. Barfuss and his colleagues for producing this massive new study.